

Patent Claims

1. A modularly constructed coach body for spacious vehicles, in particular rail vehicles for passenger transport, characterized in that the modules of the coach body are subdivided into module sections (1, 2, 3) and individually prefabricated subassemblies (8, 9), the modules being formed by the individually prefabricated subassemblies (8, 9) being joined together into module sections (1, 2, 3) and by the module sections subsequently being joined together.
2. The coach body as claimed in claim 1, characterized in that the modules are subdivided into individually prefabricated subassemblies, the modules being formed by the individually prefabricated subassemblies being joined together.
3. The coach body as claimed in claim 1 or 2, characterized in that the individually prefabricated subassemblies (8, 9) and the module sections (1, 2, 3) are joined together releasably.
4. The coach body as claimed in one of claims 1 to 3, characterized in that the module sections (1, 2, 3) and the modules (4) produced directly from individually prefabricated subassemblies are divided into a statically load-bearing lightweight skeleton joined together from individually prefabricated subassemblies and into an outer cladding and an inner cladding which are mounted in each case onto the skeleton.
5. The coach body as claimed in claim 4, characterized in that the lightweight skeletons of the modules and module sections

consist of metallic materials or fiber-reinforced plastic.

6. The coach body as claimed in one of claims 1 to 5, characterized in that the module sections (1, 2, 3) and the modules (4) produced directly from individually prefabricated subassemblies are fully equipped, before being joined together, with the inner and the outer cladding and with the associated installation components, such as windows, public address, lighting, ventilation, air conditioning and indicator instruments.

7. The coach body as claimed in one of claims 1 to 6, characterized in that the module sections (1, 2, 3) and the modules (4) produced directly from individually prefabricated subassemblies are equipped, before being joined together, with the required electric, pneumatic, hydraulic and optical lines and with the corresponding connection elements for coupling the lines during the further assembly process.

8. The coach body as claimed in one of claims 1 to 7, characterized in that the individually prefabricated subassemblies are subdivided into invariable and variable subassemblies.

9. The coach body as claimed in claim 8, characterized in that the subassemblies are designed by means of three-dimensional parametric computer-aided design technology, the computer-aided design model data thus generated are transferred, for the production of the subassemblies, to computer-assisted manufacturing processes, such as laser cutting, laser welding and open-die bending, and the variables of the variable subassemblies can be selected freely,

within a defined bandwidth, in the production process described here.

10. The coach body as claimed in one of claims 1 to 9, characterized in that the individually prefabricated subassemblies (8, 9) have container-compatible dimensions.

11. The coach body as claimed in one of claims 1 to 10, characterized in that the module sections (1, 2, 3) and the modules (4) joined together directly from individually prefabricated subassemblies have container-compatible dimensions.

12. A method for producing a modularly constructed coach body for spacious vehicles, in particular rail vehicles for passenger transport, characterized in that the individually prefabricated subassemblies are joined together into module sections or modules, the module sections are joined together into modules, and the modules are joined together into the complete coach body by cold joining by means of quick connection elements and specially-designed connection subassemblies.

13. The method as claimed in claim 12, characterized in that the individually prefabricated subassemblies are joined together into module sections or modules, the module sections are joined together into modules and the modules are joined together into the complete coach body without type-specific fixtures.

14. The method as claimed in claim 12 or 13, characterized in that quick connection elements, such as rivets, blind rivet nuts, punched rivets or retaining ring bolts, are used.

15. The method as claimed in one of claims 12 to 14, characterized in that specially-designed connection subassemblies are used, the individual parts of which consist of metallic materials and which are tied up to individually prefabricated subassemblies by means of low-heat thermal joining techniques, such as laser welding, and are joined together by the cold joining technique.

16. The method as claimed in claim 15, characterized in that any function and any mechanical stressing of joining points within the vehicle structure can be fulfilled by means of a fixed assortment of specially-designed connection subassemblies.

17. The method as claimed in one of claims 12 to 16, characterized in that the inner and the outer cladding of the module sections and of the modules joined together directly from individually prefabricated subassemblies are tied up to quick connection elements and specially-designed connection subassemblies of the lightweight skeleton by means of the cold joining technique.

18. The method as claimed in one of claims 12 to 17, characterized in that the fully equipped module sections and the fully equipped modules joined together directly from individually prefabricated subassemblies are tested individually for functioning and quality before being joined together.